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St. Louis River in Eastern Minnesota. From our common *P. Dryopteris* it differs in having a glandular stalk and fronds, the latter more erect and rigid, and having smaller pinnae on the lower side of its primary divisions. An account of it will be found on page 277 of the "Additions and Corrections" of the "Ferns of North America"—*Aspidium conterminum* and *Notholaena Grayi* were received just in time to be mentioned in that work, but *N. nivea*, and *N. Lemmoni* have only come to hand when the last pages of the book are already printed. D. C. EATON.

New Haven, *June* 21, 1880.

§ 46. **Wolffia (Wolffiella) gladiata,** Hegelm, (*die Lemnaceen, eine monographische Untersuchung*, 1868, p. 133, Taf. III, fig. 24) var. **Floridana.**—Frons lineari-falcata, in apicem flagelliformem attenuata, 15–20-plo longior quam latior, margine subintegra, per omnes partes fere ad apicem cavernosa, totâ superficie cellulis pigmentosis ochraceo-punctata.

Hab. Gainesville, Fla., Nov., 1877, H. W. Ravenel; (specimens in Herb. Harvard University from Dr. Geo. Engelmann under the name of *W. gladiata*, Hegelm.)—Great Gulf Hammock, Levy Co., Fla., growing in extensive and thick mats on or near the surface of stagnant water with *Lemna minor*, L., March, 1878, C. F. Austin and J. D. S.—Exsiccated swampy ground, Sumter Co., Fla., adhering to *Riccia natans*, L., var. *terrestris*, March, 1879, J. D. S.—Borders, exposed by the subsiding water, of a pool near Ocala, Fla., with *Wolffia Columbiana*, Karsten, *Lemna polyrrhiza*, L., *L. minor*, L., and *Amblystegium riparium*, Br. & Sch,, April, 1879, J. D. S.—Very abundant over marshes of *Typha latifolia*, L., four miles east from Cedar Keys, Fla., March, 1880, J. D. S.

Matured fronds are 3″ to 4″ long, diminishing in breadth from 0.2″ near the base to 0.04″ at the apex. The base is arcuately truncate with the stipitate angle hastate. The stipe is articulated, sub-persistent, and 0.35″ long. The pouch (*fovea, Taschengrube*) is elongated, acuminate, 0.6″ long, and at its mouth 0.3″ broad. The apical portion only of the frond ($\frac{1}{8}$ - $\frac{1}{10}$ of its length) is destitute of air-cavities. Usually 2, and sometimes 3 to 6, vegetative generations cohere. It is readily distinguishable from any described Cis-Mexican form of *Wolffia* by its elongation, but better by the character of the sub-genus, viz: "**Wolffiella.** Frons pone marginem lateralem foveae basilaris proliferae frondi maternae affixa, directione horizontali symmetrica. Plantae tantum steriles notae." (Hegelm. Lemnaceae in Martius' Flora Brasiliensis, fasc. LXXVI, 1878).

In the plant from Mexico, described as *W. gladiata*, the air-cavities do not extend to the anterior $\frac{1}{4}$—$\frac{1}{5}$ part of the frond, or to the portion forming the pouch; the sabre-shaped frond is one-half shorter in proportion to its breadth, and with a 4 to 5 times broader rounded apex.

Dr. Hegelmaier writes as follows in regard to specimens of this plant submitted to him for examination under the name of *W. Floridana*, n. sp.:

"The plants from all four stations belong strictly to the same form, and that is nearly related with the one from Mexico, described as *W. gladiata.* As is correctly observed in your description, the Florida is distinguished from the Mexican plant by the much (1½–2 times) greater elongation of the fronds. The apical portion especially is considerably narrower in proportion ; and, although there is always a part of that portion destitute of air-cavities, yet that part is relatively shorter. Moreover, the sabre-like curvature of the fronds is often more decided. The last two characters are directly associated with the more elongated forms. I have some doubts, however, whether it is advisable to distinguish *W. Floridana* as a species. From my observations of other *Lemnaceae* I should hardly venture to found a separate species upon the above differences. At any rate, however, we have here a beautiful and interesting form, the discovery of which in such quantities in Florida constitutes an important contribution to the Flora of the United States. Had both forms come to my knowledge at the same time, I should probably have taken the Florida plant for the type of the species, inasmuch as it is constant with itself wherever you have found it ; and the Mexican plant would have been treated as a *var. abbreviata.* The Cedar Keys specimens are the best adapted for study of structure, as they abound in starch, and after colorization by chloride of zinc the extent to which air-cavities prevail becomes plain."

The sub-genus *Wolffiella* comprises three other species. These differ from *W. gladiata* only in subordinate characters. *W. denticulata*, Heglm., from South Africa, has air-cavities embracing the whole frond and the pouch, but pigment-cells are not present at the anterior end, and the apex of the linear frond is truncate and denticulate. In *W. oblonga*, Philippi, from Chili, and in *W. lingulata*, Hegelm., from Mexico, Brazil and India, pigment-cells pervade the whole plant, air-cavities embracing in the former species every part except the pouch, and in the latter species only a small part of the posterior end of the frond ; the outlines of each are as indicated by their names. I am indebted to Messrs. Sereno Watson and Charles F. Parker for the opportunity to examine typical specimens of *W. gladiata* and *W. lingulata.*

But Dr. Hegelmaier has remarked upon two singular deviations, which all of these plants exhibit from the type of *Wolffia*, and which have led him to conjecture that *Wolffiella* will constitute a distinct genus when its reproductive organs shall come to be known.

1st. The insertion of the stipe at the basal angle, and the position of the costa along the lateral margin of the pouch, cause the frond to be *transverse*, instead of *median* zygomorphous.

2d. The stipe and costa of the cohering young frond occupy the opposite side of the pouch to those organs in the parent frond. Hence, if we detach the two fronds from each other, and bring them into superposition without changing their exposed surfaces, they will be found to have stipe and costa similarly right and left, and their agreement to be absolute, and not relative as in a pair of opposite leaves. This anomaly has been found difficult to interpret morphologically in the absence of any knowledge of the inflorescence of these plants. JOHN DONNELL SMITH.

Baltimore, *May 27th.*